

CLAIMS

1. In a single device testing apparatus, a method for testing devices carried by at least two test trays, wherein each tray carries at least one device, the method comprising:

5 transporting a first tray along a first transport path to a first test position;

transporting a second tray along a second transport path to a second test position;

testing at least one device on the first tray at the first test position; and

10 testing at least one device on the second tray at the second test position.

2. The method of claim 1, wherein the testing comprises:

testing at least one device on the first tray at the first test position while testing at least one device on the second tray at the second test position.

3. The method of claim 1, further comprising:

15 transporting the first tray to the first test position while transporting the second tray to the second test position.

4. The method of claim 1, further comprising:

before transporting the first tray to a first test position:

transporting the first tray into a first section; and

20 transporting the second tray into the first section.

5. The method of claim 4, wherein the transporting of the first tray and the second tray into the first section comprises transporting the first tray and the second tray along one transport path, further wherein the second tray follows the first tray into the first section along the one transport path.

25 6. The method of claim 5, further comprising:

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loading the first tray with devices; and

loading the second tray with devices after loading the first tray with devices.

7. The method of claim 4, further comprising:

5 transporting a third tray into the first section to occupy a position previously occupied by the first tray in the first section; and

transporting a fourth tray into the first section, wherein the fourth tray follows the third tray into the first section.

8. The method of claim 7, further comprising:

10 transporting the first tray from the first test position while transporting the second tray from the second test position; and

transporting the third tray to one of the first or second test positions while transporting the fourth tray to the other of the first or second test positions.

15 9. The method of claim 8, further comprising:

transporting the first and second trays from the test positions into a second section;

transporting the second tray out of the second section; and

20 transporting the first tray after the second tray out of the second section.

10. The method of claim 9, further comprising:

transporting the second tray into a third section after the second tray exits the second section;

unloading at least one device from the second tray in the third section;

25 and

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transporting the first tray into the third section following the second tray.

11. The method of claim 1, further comprising:

transporting the first tray from the first test position while transporting the second tray from the second test position; and

5 transporting a third tray to one of the first or second test positions while transporting a fourth tray to the other of the first or second test positions.

12. The method of claim 4, further comprising:

maintaining a first environmental condition in the first section.

10 13. The method of claim 12, wherein the first environmental condition is a first temperature value.

14. The method of claim 9, further comprising:

maintaining a first environmental condition in the first section; and

maintaining a second environmental condition in the second section.

15 15. The method of claim 14, wherein the first and second environmental conditions are first and second temperature values, respectively.

16. The method of claim 12, further comprising:

maintaining the first environmental condition at the test positions.

17. The method of claim 16, wherein the first section and the test positions are contained in an environmental chamber.

20 18. The method of claim 1, wherein the device is an electronic device.

19. The method of claim 18, wherein the device is an integrated circuit.

20. The method of claim 1, further comprising:

transporting the first and second trays into a stage of a support structure, the support structure for supporting a stack of trays, wherein each stage supports at least two trays; and

5 moving the first and second trays together in the support structure in a first direction transverse to a path followed by the trays during the transporting of the first and second trays to the test positions.

21. The method of claim 20, wherein the first and second trays are transported to the test positions after the first and second trays are moved to a predetermined position in the first direction.

10 22. In a single device testing apparatus, a method for testing devices carried by at least two test trays, wherein each tray carries at least one device, the method comprising:

transporting a first tray to a first test position;

15 transporting a second tray, in parallel to the first tray, to a second test position;

testing at least one device on the first tray at the first test position; and

testing at least one device on the second tray at the second test position.

23. The method of claim 22, wherein the testing comprises:

20 testing at least one device on the first tray at the first test position while testing at least one device on the second tray at the second test position.

24. The method of claim 22, wherein the transporting of the second tray to the second test position comprises:

25 transporting the second tray, in parallel to the first tray, to the second test position while transporting the first tray to the first test position.

25. The method of claim 22, further comprising:

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before transporting the first tray to the first test position:

transporting the first tray into a first section; and

transporting the second tray into the first section.

26. The method of claim 22, wherein the transporting of the first and
5 second trays to the first and second test positions comprises transporting the first and second trays in parallel along one transport path that is wider than a transport path that would be necessary for transporting only the first tray.

27. The method of claim 26, wherein the transporting of the first and
10 second trays along one transport path comprises transporting the first and second trays using a single drive.

28. The method of claim 22, wherein the first and second trays are mechanically coupled together for transport to the test positions.

29. The method of claim 25, further comprising:

15 transporting a third tray into the first section to occupy a position previously occupied by the first tray in the first section; and

transporting a fourth tray into the first section, wherein the fourth tray follows the third tray into the first section.

30. The method of claim 29, further comprising:

20 transporting the first tray from the first test position while transporting the second tray from the second test position; and

transporting the third tray to one of the first or second test positions while transporting the fourth tray to the other of the first or second test positions.

31. The method of claim 30, further comprising:

25 transporting the first and second trays from the test positions into a second section;

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transporting the second tray out of the second section; and

transporting the first tray after the second tray out of the second section.

32. The method of claim 31, further comprising:

5 transporting the second tray into a third section after the second tray exits the second section;

unloading at least one device from the second tray in the third section;
and

transporting the first tray into the third section following the second tray.

10 33. The method of claim 22, further comprising:

transporting the first tray from the first test position while transporting the second tray from the second test position; and

transporting a third tray to one of the first or second test positions while transporting a fourth tray to the other of the first or second test positions.

15 34. The method of claim 25, further comprising:

maintaining a first environmental condition in the first section.

35. The method of claim 34, wherein the first environmental condition is a first temperature value.

36. The method of claim 31, further comprising:

20 maintaining a first environmental condition in the first section; and

maintaining a second environmental condition in the second section.

37. The method of claim 36, wherein the first and second environmental conditions are first and second temperature values, respectively.

38. The method of claim 34, further comprising:

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47. The system of claim 44, further comprising a first section into which the first and second trays are received before the first tray is transported to a first test position.

49. The system of claim 47, further comprising:

50. The system of claim 47, wherein the first section receives a third tray to occupy a position previously occupied by the first tray in the first section, further wherein the first section receives a fourth tray after receiving the third tray.

the first transport path transports the first tray from the first test position while the second transport path transports the second tray from the second test position; and

52. The system of claim 51, further comprising:

a second section into which the first and second transport paths transport the first and second trays, respectively, from the test positions, and out of which the second tray is transported followed by the first tray.

53. The system of claim 52, further comprising:

a third section for receiving the second tray after it exits the second section, and for subsequently receiving the first tray; and

an unloader in the third section for unloading at least one device from
5 at least one tray.

54. The system of claim 44, wherein:

the first transport path transports the first tray from the first test position while the second transport path transports the second tray from the second test position; and

10 the first transport path transports a third tray to the first test position while the second transport path transports a fourth tray to the second test position.

55. The system of claim 47, further comprising:

a first chamber for maintaining a first environmental condition in the
15 first section.

56. The system of claim 55, wherein the first environmental condition is a first temperature value.

57. The system of claim 52, further comprising:

a first chamber for maintaining a first environmental condition in the
20 first section; and

a second chamber for maintaining a second environmental condition in the second section.

58. The system of claim 57, wherein the first and second environmental conditions are first and second temperature values, respectively.

25 59. The system of claim 55, wherein the first chamber further maintains the first environmental condition at the test positions.

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60. The system of claim 59, wherein the first chamber contains the first section and the test positions.

61. The system of claim 44, wherein the device is an electronic device.

62. The system of claim 57, wherein the device is an integrated circuit.

5 63. The system of claim 44, further comprising:

a support structure comprising a plurality of stages, each stage supporting at least two trays, wherein the support structure moves the first and second trays together in a first direction transverse to a direction followed by the trays during the transporting of the trays to the test positions.

10 64. The system of claim 63, wherein the first and second trays are transported to the test positions after the support structure moves the first and second trays to a predetermined position in the first direction.

65. A system for testing devices carried by at least two test trays, wherein each tray carries at least one device, the system comprising:

15 at least one transport path for transporting a first tray and a second tray in parallel to a first test position and a second test position, respectively;

a tester for testing at least one device on the first tray at the first test position, and for testing at least one device on the second tray at the second test position.

20 66. The system of claim 65, wherein the tester tests at least one device on the first tray at the first test position while testing at least one device on the second tray at the second test position.

25 67. The system of claim 65, wherein the at least one transport path transports the second tray to the second test position while transporting the first tray to the first test position.

68. The system of claim 65, further comprising:

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69. The system of claim 65, wherein the at least one transport path is a single transport path that is wider than a transport path that would be necessary for transporting only the first tray.

71. The system of claim 65, wherein the first and second trays are mechanically coupled together for transport to the test positions.

a loader for loading the first tray with devices, and for loading the second tray with devices after loading the first tray with devices.

73. The system of claim 68, wherein the first section receives a third tray to occupy a position previously occupied by the first tray in the first section, further wherein the first section receives a fourth tray after receiving the third tray.

the at least one transport path transports the first tray from the first test position while transporting the second tray from the second test position; and

the at least one transport path transports the third tray to the first test positions while transporting the fourth tray to the second test position.

a second section into which the at least one transport path transports the first and second trays from the test positions, and out of which the second tray is transported, followed by the first tray.

76. The system of claim 75, further comprising:

a third section for receiving the second tray after it exits the second section, and for subsequently receiving the first tray; and

an unloader in the third section for unloading at least one device from at least one tray.

5 77. The system of claim 65, wherein:

the at least one transport path transports the first tray from the first test position while transporting the second tray from the second test position; and

the at least one transport path transports a third tray to the first test position while transporting a fourth tray to the second test position.

10 78. The system of claim 68, further comprising:

a first chamber for maintaining a first environmental condition in the first section.

79. The system of claim 78, wherein the first environmental condition is a first temperature value.

15 80. The system of claim 75, further comprising:

a first chamber for maintaining a first environmental condition in the first section; and

a second chamber for maintaining a second environmental condition in the second section.

20 81. The system of claim 80, wherein the first and second environmental conditions are first and second temperature values, respectively.

82. The system of claim 78, wherein the first chamber further maintains the first environmental condition at the test positions.

25 83. The system of claim 82, wherein the first chamber contains the first section and the test positions.

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84. The system of claim 65, wherein the device is an electronic device.

85. The system of claim 84, wherein the device is an integrated circuit.

86. The system of claim 65, further comprising:

a support structure comprising a plurality of stages, each stage
5 supporting at least two trays, wherein the support structure moves the first
and second trays together in a first direction transverse to a direction followed
by the trays during the transporting of the trays to the test positions.

87. The system of claim 86, wherein the first and second trays are
transported to the test positions after the support structure moves the first and
10 second trays to a predetermined position in the first direction.

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